

WE CLAIM

1. An optical supervisory channel apparatus provided with an integrated time domain reflectometer, comprising:

5 OSC equipment;

a pulse generator for providing a diagnostic pulse;

a light source for launching an optical diagnostic signal comprised of a supervisory channel modulated with said pulse over a strand of fiber;

a receiver for detecting a reflected variant of said optical diagnostic signal generated by irregularities in said fiber strand; and

10 means for extracting reflectometry information from said reflected variant, wherein said light source is used for launching said optical diagnostic signal over said supervisory channel whenever said apparatus operates in a diagnostic mode, and is used for transmitting said supervisory channel in normal operation mode.

15 2. An apparatus as claimed in claim 1, wherein said receiver is a high sensitivity reflection detector.

20 3. An apparatus as claimed in claim 1, wherein said receiver is an avalanche photodiode.

25 4. An apparatus as claimed in claim 1, wherein said means for extracting reflectometry data comprises an analog -to- digital converter for converting said reflected variant from an analog to a digital format.

30 5. An apparatus as claimed in claim 4, wherein said means for extracting reflectometry data comprises a DSP for receiving said digital reflected variant from said analog-to-digital converter and a delayed variant of said diagnostic pulse and processing same to obtain an interference signal.

6. An apparatus as claimed in claim 1, wherein said pulse generator provides a series of pulses for providing a large sample space.

5           7. An apparatus as claimed in claim 6, wherein said means for extracting reflectometry data comprises:

an analog -to- digital converter for converting said reflected variant from an analog to a digital format;

10           a DSP for receiving said digital reflected variant from said analog-to-digital converter and a delayed variant of said series of pulses and averaging said reflected variant over a period of time to obtain an interference signal.

15           8. An apparatus as claimed in claim 1, wherein said OSC equipment comprises a microprocessor for processing supervisory information carried over said supervisory channel.

20           9. An apparatus as claimed in claim 8, wherein said microprocessor controls said apparatus to operate in an OSC mode and an OTDR mode.

25           10. An apparatus as claimed in claim 9, wherein said microprocessor controls said pulse generator for varying the rate of said diagnostic pulse when in said OTDR mode.

30           11. An apparatus as claimed in claim 5, wherein said OSC equipment comprises a microprocessor for processing supervisory information carried over said supervisory channel and for processing said interference signal to obtain a power versus distance graph and locate reflections occurring along said fiber strand.

12. An apparatus as claimed in claim 11, further comprises post-processing capabilities at a terminal attachable to said apparatus for displaying said graph.

5           13. An apparatus as claimed in claim 11, wherein said interference signal is processed by said microprocessor to obtain OTDR information.

10           14. An apparatus as claimed in claim 13, wherein said OTDR information is provided to a network manager over said OSC for remote implementation of OTDR procedures on operating channels.

15. An apparatus as claimed in claim 13, wherein said OTDR information is used to monitor and provision dynamic range.

16. An apparatus as claimed in claim 13, wherein said OTDR information is used to monitor and provision loss resolution.

17. An apparatus as claimed in claim 13, wherein said OTDR information is used to monitor and provision spatial resolution.

20           18. An apparatus as claimed in claim 13, wherein said OTDR information is used to monitor and provision level accuracy.

25           19. An apparatus as claimed in claim 13, wherein said OTDR information is used to monitor and provision pulse width.